Contents of Volume 15

NUMBER 1 JANUARY 1990

Factor Analysis of d(*NE*)/d*E* Auger Electron Spectra of AuCu Alloys: Surface Composition during Ar^+ Ion Bombardment and Oxidation 1
C. JANSSON AND P. MORGEN

Evaluation and Measurement of Changes in Intensity of the Characteristic Lines and Background of Auger Electron Spectra due to Crystalline Effects. Application to an Aluminium Target Bombarded with Electrons 7
B. AKAMATSU, P. HENOC, F. MAURICE, C. LE GRESSUS, K. RAOUADI, T. SEKINE AND T. SAKAI

Secondary Effects in Laser Ionization Surface Analysis 15
K. ROHR AND R. THOEMMES

Studies of UV/Ozone Oxidation of GaAs Using Angle-resolved X-ray Photoelectron Spectroscopy 19
B. J. FLINN AND N. S. McINTYRE

Measurements of the Magnitude of Crystalline Effects in Auger Electron Spectroscopy 27
H. E. BISHOP

Damage and Recovery by Electron and Ion Beam Irradiation during AES Analysis of Silicon Oxynitrides 38
H. BENDER AND W. D. CHEN

Charge Distribution and *Local* and *Non-local* Screening Effects Studied by Means of the Auger Parameter and Chemical State Plots 47
G. MORETTI AND P. PORTA

An ECSA Method for Determining the Oxide Thickness on Aluminum Alloys 51
B. R. STROHMEIER

Analysis of Superconducting Thin Films by Ion Beam Methods. Comparison of Nuclear Techniques and SIMS 57
J. P. STOQUERT, E. FOGARASSY, R. STUCK, G. GUILLAUME, P. SIFFERT AND J. PERRIERE

Short Communication
Charge Compensation and High-resolution TOFSIMS Imaging of Insulating Materials 62
D. BRIGGS, M. J. HEARN, I. W. FLETCHER, A. R. WAUGH AND B. J. McINTOSH

NUMBER 2 FEBRUARY 1990

Proceedings of the 11th Symposium on Applied Surface Analysis
Cleveland, Ohio, USA, 31 May–2 June 1989

Preface 71

Energetics of Nickel and Palladium 73
C. W. FINLEY AND J. FERRANTE

Secondary Ion Shadow-cone Enhanced Desorption 79
C.-C. CHANG

The Effect of Thin Titanium Oxide Layers on the Wettability of Thin-film Nickel Metallization 85
J. H. THOMAS, III AND T. T. HITCH

Raman Studies of Laser-ablated ETFE (Tefzel®) Films 95
L. M. SIPERKO, W. R. CREASY AND J. T. BRENNA

An Auger Sputter Profiling Study of Nitrogen and Oxygen Ion Implantations in Two Titanium Alloys 100
B. D. BARTON, L. E. POPE AND T. N. WITTBERG

Effects of SO_2 Deposition on Painted Steel Surfaces 107
G. D. DAVIS, B. A. SHAW, C. O. ARAH, T. L. FRITZ, W. C. MOSHIER, T. C. SIMPSON, P. J. MORAN AND K. L. ZANKEL

Determination of Amino and Silanol Functional Groups on Glass via Chemical Derivatization and ESCA 113
T. A. DANG AND R. GNANASEKARAN

Surface Reactions of Copper Films in $O_2/CF_4/N_2$ Plasmas 119
D. D. COOLBAUGH, L. J. MATIENZO, F. D. EGITTO AND A. R. KNOLL

Depth Profiles of Ag/Si(111) Thin-film Interface Regions 126
G. P. CHAMBERS AND B. D. SARTWELL

A Fracture Technique for Auger Analysis of a Zinc/Steel Interface 135
W. J. EBERLE

Identifying Type 304 Stainless Steel Flange Defects using Scanning Auger Microscopy (SAM) 139
W. J. EBERLE AND S. P. CLOUGH

The Effects of Excimer Laser Annealing and Yttria on Corrosion of an FeCrNi Alloy at 700°C 143
D. R. BAER, I. G. WRIGHT AND T. R. JERVIS

Growth and Characterization of GaAs on Sapphire (0001) by Molecular Beam Epitaxy 150
A. C. DIEBOLD, S. W. STEINHAUSER, R. P. MARIELLA, JR., J. MARTI, F. REIDINGER AND R. F. ANTRIM

Aluminum Surface Mobility on Two Types of Silicon Oxide during Ionized Cluster Beam Deposition 159
L. L. LEVENSON, A. B. SWARTZLANDER, H. USUI AND I. YAMADA

The Influence of Chemical Environment upon the Mercury 5d Electronic Structure 163
P. A. DOWBEN, Y. J. KIME, D. LaGRAFFE AND M. ONELLION

XPS Analysis of the Interphase Between an Anaerobic Adhesive and Metal Substrates 167
S. J. HUDAK, F. J. BOERIO, P. J. CLARK AND Y. OKAMOTO

Deposition of MgO/Au Cermet Films by Triode Sputtering and their Characterization 173
V. H. RITZ

Chemical Shifts in the MNN Auger Spectra of Cd, In, Sn, Sb and Te 180
L. C. LYNN AND R. L. OPILA

NUMBER 3 MARCH 1990

REVIEW PAPER: Analysis of Semiconductors and Insulators by High-resolution Electron Energy Loss Spectroscopy—Prospects for Quantification 189
J. J. PIREAUX, P. A. THIRY, R. SPORKEN AND R. CAUDANO

Decomposition of $2p_{3/2}$ Bands in XPS Spectra of Fe, Co and Ni Compounds 206
J. STOCH AND A. CAPECKI

XPS Study of the Y/SiO_x Interface at Room Temperature 211
R. REICHL AND K. H. GAUKLER

Determination of Peak Positions and Areas from Wide-scan XPS Spectra 215
N. H. TURNER AND A. M. SINGLE

Depth Profiling Studies of Oxidized Alloy Surfaces by Glow Discharge Emission Spectroscopy 223
K. TSUJI AND K. HIROKAWA

Short Communication
Program for XPS Spectrum Conversion to VGS-5000 Format 229
P. B. ABEL

NUMBER 4 APRIL 1990

General Theoretical Treatment of the Angular Dependence of Critical Depths in X-ray Fluorescence Spectroscopic Studies of Surfaces, Thin Films and Multilayers 235
T. SCIMECA AND G. ANDERMANN

***In situ* X-ray Photoelectron Spectroscopy of Surfaces at Pressures up to 1 mbar** 245
H. J. RUPPENDER, M. GRUNZE, C. W. KONG AND M. WILMERS

Method for the Alignment of Samples and the Attainment of Ultra-high-resolution Depth Profiles in Auger Electron Spectroscopy 254
C. P. HUNT AND M. P. SEAH

Quantitative Analysis of SIMS Spectra of Mixtures of Powders of $FeSO_4$ and $ZnSO_4$ 259
D. MICHAUD, M. BARIL AND A. ADNOT

X-ray Photoelectron Spectroscopic Studies of Thin Film Oxides of Cobalt and Molybdenum 265
N. S. McINTYRE, D. D. JOHNSTON, L. L. COATSWORTH, R. D. DAVIDSON AND J. R. BROWN

AES and RBS Analyses of Tokamak Collector Probes—Experimental Considerations 273
R. W. PAYNTER AND G. G. ROSS

Radial Distribution of Heterogenized Hydroformylation Rh Complexes in Phosphinated Polystyrene Beads 279
P. TERREROS, E. PASTOR, J. M. PALACIOS AND J. L. G. FIERRO

NUMBER 5 MAY 1990

Application of Fast Atom Bombardment (FAB) for Ion Microscopy of a Rock Sample 289
H. SEYAMA AND M. SOMA

AES: Energy Calibration of Electron Spectrometers. I—An Absolute, Traceable Energy Calibration and the Provision of Atomic Reference Line Energies 293
M. P. SEAH, G. C. SMITH AND M. T. ANTHONY

AES: Energy Calibration of Electron Spectrometers. II—Results of a BCR Interlaboratory Comparison Co-sponsored by the VAMAS SCA TWP 309
M. P. SEAH AND G. C. SMITH

An Empirical Electron Spectrometer Transmission Function for Applications in Quantitative XPS 323
C. S. HEMMINGER, T. A. LAND, A. CHRISTIE AND J. C. HEMMINGER

A Surface Spectroscopic Study of Nitrogen Ion-implanted Ti and Ti–6Al–4V Wear Against UHMWPE 328
J. LAUSMAA, T. RÖSTLUND AND H. McKELLOP

Influence of Ion Mixing, Ion Beam-induced Roughness and Temperature on the Depth Resolution of Sputter Depth Profiling of Metallic Bilayer Interfaces 337
E.-H. CIRLIN, Y.-T. CHENG, P. IRELAND AND B. CLEMENS

Short Communication
XPS Determination of the Thickness of Adsorbed Mouthrinse Components on Dental Enamel 344
H. J. BUSSCHER, H. C. van der MEI, M. J. GENET, J. F. PERDOK AND P. G. ROUXHET

NUMBER 6 JUNE 1990

Oxidation of an NiTi Alloy 349
C.-M. CHAN, S. TRIGWELL AND T. DUERIG

Surface Composition and Chemical Bonding of Thermally Reduced Yttria as Studied by XPS and SEXAFS: Influence of Zr Doping 355
N. THROMAT, M. GAUTIER, F. JOLLET, J. P. DURAUD AND C. LE GRESSUS

XPS Study of the State of Oxygen on a Chemically Treated Glass Surface 364
M. MOHAI, I. BERTÓTI AND M. RÉVÉSZ

SSIMS, XPS and Microstructural Studies of ac-Phosphoric Acid Anodic Films on Aluminium 369
J. A. TREVERTON, J. BALL, D. JOHNSON, J. C. VICKERMAN AND R. H. WEST

Characterization of Nitrogen Distribution Profiles in fcc Transition Metal Nitrides by Means of T_c Measurements 377
W. LENGAUER

Influence of Surface Melting Treatment by Laser on the Segregation of Sulphur, Nitrogen and Chromium on the Surface of a Single-crystal FeCrNi Alloy 383
G. MOULIN, A. LARERE AND P. MARCUS

Short Communication

Static SIMS Study of Miscible Blends of Polystyrene and Poly(vinyl methyl ether) 388
Q. S. BHATIA AND M. C. BURRELL

NUMBER 7 JULY 1990

REVIEW PAPER: Contributions of Surface Analysis to Corrosion Science: Selective Dissolution and Oxidation Phenomena in Alloy Corrosion 395
D. LANDOLT

Monte Carlo Calculations of the X-ray Induced Enhancement Signal in Electron Probe Microanalysis (EPMA) and Auger Electron Spectroscopy (AES) of Stratified Materials 405
A. G. NASSIOPOULOS AND E. VALAMONTES

Optimization of the Dynamic Range of SIMS Depth Profiles by Sample Preparation 415
R. VON CRIEGERN, I. WEITZEL, H. ZEININGER AND R. LANGE-GIESELER

Characterization of $CuInSe_2$ Thin Films by XPS 422
E. NIEMI AND L. STOLT

Intergranular Fracture Surface Analysis of Molybdenum 427
F. MORITO

Analysis of AlGaAs/GaAs Superlattices by Means of Sputter-assisted AES, SEM and TEM 433
K. KAJIWARA AND H. KAWAI

An AES Study of the Room-temperature Oxidation of $TaSi_x$ after Bombardment with Ar^+ Ions of Different Energies 440
M. CLEMENT, J. M. SANZ AND J. M. MARTINEZ-DUART

The Effect of Atomic-scale Etch Pit Formation on Depth Resolution in Sputter Profiling 447
G. CARTER, M. J. NOBES AND I. V. KATARDJIEV

Short Communication

Back-side SIMS Profiles of Dopant Redistribution under Silicide Films 451
J. A. JACKMAN, A. KULAR, L. WEAVER, D. MAYER, T. E. JACKMAN AND C. MacPHERSON

NUMBER 8 AUGUST 1990

Surface Investigation of Copper in the Printed Circuit Board 457
A. MANARA AND V. SIRTORI

Sputter Depth Profile Analysis of Marker Layers 463
J. A. PEINADOR, I. ABRIL, J. J. JIMÉNEZ-RODRÍGUEZ AND A. GRAS-MARTI

Evaluation of Correction Accuracy of Several Schemes for AES Matrix Effect Corrections 466
S. TANUMA, T. SEKINE, K. YOSHIHARA, R. SHIMIZU, T. HOMMA, H. TOKUTAKA, K. GOTO, M. UEMURA, D. FUJITA, A. KUROKAWA, S. ICHIMURA, C. OSHIMA, M. KURAHASHI, M. KUDO, Y. HASHIGUCHI, T. SUZUKI, T. OHMURA, F. SOEDA, K. TANAKA, A. TANAKA, Y. SHIOKAWA AND T. HAYASHI

Silver Halide Infrared Fibre-optic Evanescent Wave Spectroscopy for *in situ* Monitoring of the Chemical Processes in Adhesive Curing 473
E. MARGALIT, H. DODIUK, E. M. KOSOWER AND A. KATZIR

Surface Characterization of Butyl Methacrylate Polymers by XPS and Static SIMS 479
D. G. CASTNER AND B. D. RATNER

Sputter Reduction of Oxides by Ion Bombardment during Auger Depth Profile Analysis 487
D. F. MITCHELL, G. I. SPROULE AND M. J. GRAHAM

Short Communication

XPS Analysis of Silane Coupling Agents and Silane-treated E-glass Fibers 498
C. G. PANTANO AND T. N. WITTBERG

NUMBER 9 SEPTEMBER 1990

Cf-252 Particle Desorption Mass Spectrometry of Photo-oxidized Polystyrene 503
L. QUINONES AND E. A. SCHWEIKERT

XPS Study of Metal/Polymer Interaction: Evaporated Aluminum on Polyvinyl Alcohol Polymer 509
P. STOYANOV, S. AKHTER AND J. M. WHITE

Improved Dynamic Range and Automated Lineshape Differentiation in AES/XPS Composition versus Depth Profiles 516
D. G. WATSON

Applications of Secondary Neutral Mass Spectrometry (SNMS) in VLSI Technology 525
M. ANDERLE AND L. MORO

Electronic and Structural Characterization of Electrochemically Synthesized Conducting Polyaniline from XPS Studies 531
S. N. KUMAR, G. BOUYSSOUX AND F. GAILLARD

Auger Depth Profiling of Polycrystalline Metal Films Using Xe^+ and N_2^+ Ions 537
M. TANEMURA, S. FUJIMOTO AND F. OKUYAMA

Performance and Application of the Scienta ESCA300 Spectrometer 541
G. BEAMSON, D. BRIGGS, S. F. DAVIES, I. W. FLETCHER, D. T. CLARK, J. HOWARD, U. GELIUS, B. WANNBERG AND P. BALZER

Theoretical and Experimental Studies of the Broadening of Dilute Delta-doped Si Spikes in GaAs during SIMS Depth Profiling 550
R. BADHEKA, M. WADSWORTH, D. G. ARMOUR, J. A. Van Den BERG AND J. B. CLEGG

Quantitative AES: Via the Inelastic Mean Free Path or the Attenuation Length? 559
A. JABLONSKI

A New Approach in Non-destructive Characterization and *X–Y* Profilometry of Coatings 567
J. CAZAUX, O. JBARA AND X. THOMAS

Short Communication

Improvement of the AES Detection Limit for Phosphorus in Silicon by Principal Component Analysis or Spline Smoothing 583
M. PROCOP AND E.-H. WEBER

NUMBER 10 OCTOBER 1990

Ion Microprobe for Studying Cluster Ion Decay Reactions 587
A. D. BEKKERMAN, N. Kh. DZHEMILEV AND V. M. ROTSTEIN

Analysis of Zirconium–Niobium Pressure Tube Surfaces for Hydrogen using Secondary Ion Mass Spectrometry (SIMS) 591
N. S. McINTYRE, C. G. WEISENER, R. D. DAVIDSON, W. N. LENNARD, G. R. MASSOUMI, I. V. MITCHELL, A. BRENNENSTUHL AND B. WARR

Determination of the Sputtering Rate of Electroless Nickel Layers with a Glow Discharge Lamp 598
R. G. BÖHMER AND J. T. NEL

Temperature Influences on Surface Energetic Parameters Evaluated at Solid–Liquid Interfaces 603
J. McGUIRE, E. LEE AND R. D. SPROULL

Water Interactions in Al/PET 609
M. CHTAIB, A. PEREMANS, Y. NOVIS, R. CAUDANO, L. BUTAYE, F. ADAMS, P. LUTGEN AND G. FEYDER

Surface Enrichment in CuO_x/ZnO Samples at Low Cu Contents 614
P. REYES AND P. A. SERMON

The Ageing of Li Implants in Cadmium Mercury Telluride 617
G. W. BLACKMORE, S. J. COURTNEY, M. G. ASTLES AND N. SHAW

Improved Depth Resolution in Auger Depth Profiles of TiN Thin Films by Optimized Sputtering Parameters 621
W. PAMLER, E. WILDENAUER AND A. MITWALSKY

XPS Determination of Oxygen-containing Functional Groups on Carbon-fibre Surfaces and the Cleaning of These Surfaces 627
E. DESIMONI, G. I. CASELLA, A. MORONE AND A. M. SALVI

The Characterization of Doped and Undoped States of Conducting Polypyrrole, Poly-3-methylthiophene and Poly(3-thiopheneacetic acid) Thin Films on a Platinum Surface by Specular-reflectance Fourier Transform Infrared Spectroscopy 635
J. H. WANG

NUMBER 11 NOVEMBER 1990

XPS Investigation of Anodic Oxides Grown on p-Type InP 641
MARIA FAUR, MIRCEA FAUR, D. T. JAYNE, M. GORADIA AND C. GORADIA

Surface Characterization of Chemically Modified Chrysotile Asbestos by Particle-induced Desorption Mass Spectrometry 651
J. A. BENNETT, E. A. SCHWEIKERT, D. POISSON AND C. JOLICOEUR

Investigation of Gallium Arsenide Multilayer Structures using a Tunnelling Microscope Combined with a UHV-SEM 659
O. ALBREKTSEN AND H. SALEMINK

XPS Study of Mixed Cerium–Terbium Orthophosphate Catalysts 663
J. M. PEMBA-MABIALA, M. LENZI, J. LENZI AND A. LEBUGLE

XPS Analytical Characterization of Amorphous Alloys: $Fe_{70}Cr_{10}P_{13}C_7$ 668
D. DE FILIPPO, A. ROSSI, B. ELSENER AND S. VIRTANEN

EELS and Low-energy Electron Emission of Clean and Oxygen-exposed Tantalum 675
C. PALACIO AND J. M. MARTÍNEZ-DUART

Intercomparison of Surface Analysis of Thin Aluminium Oxide Films 681
I. OLEFJORD, H. J. MATHIEU AND P. MARCUS

Interpretation of Surface Textural Changes in $SrTiO_3$ Ex-oxalate Samples using XPS and IR Spectroscopies 693
G. MUNUERA, A. R. GONZALEZ-ELIPE, J. P. ESPINOS AND E. LOPEZ-MOLINA

Short Communications

XPS Study of Transition Metal/Alumina Model Catalysts: Equilibrium and Energy Referencing 698
P. LÉGARÉ AND A. FRITSCH

Quantitative AES: Reducing Errors in Measured Analogue Spectral Intensities through Control of the Electron Detector 701
M. P. SEAH AND G. C. SMITH

Spectral Properties of the Al and Mg $K\alpha_1$ Lines Determined by the PAX Method 705
K. H. RICHTER

NUMBER 12 DECEMBER 1990

Surface Structure of MgF_2-supported Vanadium Oxide Monolayer Catalysts 711
J. HABER, J. STOCH AND M. WOJCIECHOWSKA

Restoration of the Depth–Concentration Profile from the Angle-resolved Relative Intensities of X-ray Photoelectron Spectra 719
R. JISL

An IETS Study of Some Selected Tripodal Adsorbates on Plasma-grown Aluminium and Magnesium Oxides 727
N. M. D. BROWN AND G. M. TAGGART

Analysis of Polymer Surfaces by SIMS. Part 14. Aliphatic Hydrocarbons Revisited 734
D. BRIGGS

Effect of Scattering Processes on the Spectra of Electrons Emitted from the Surface of Solids: Monte Carlo Calculations 739
A. ŠPALEK

Study of Surface Passivation of InP 745
MIRCEA FAUR, MARIA FAUR, P. JENKINS, M. GORADIA, S. BAILEY, D. JAYNE, I. WEINBERG AND C. GORADIA

Quantitative AES and XPS: Determination of the Electron Spectrometer Transmission Function and the Detector Sensitivity Energy Dependencies for the Production of True Electron Emission Spectra in AES and XPS 751
M. P. SEAH AND G. C. SMITH

Application of Tougaard Background Subtraction to Auger Spectra. I: Silicon, SiO_2 and Si_3N_4 767
H. BENDER

Depth Analysis of Nickel Thin Films on Silicon by Glow Discharge Spectroscopy: the Interface Region 775
Z. WEISS

Depth Profiling Resonance Ionization Mass Spectrometry of Be-Doped, Layered III–V Compound Semiconductors 781
S. W. DOWNEY, A. B. EMERSON, R. F. KOPF AND J. M. KUO

A High Energy Resolution, High Spatial Resolution Photoemission Microscope 786
G. S. KNAPP, M. KEENYLSIDE AND C. GRIFFIN

Short Communications

Correcting the Depth Profiles Broadened by the Crater Effect: a Numerical Procedure 791
Z. WEISS

Determination of the Atomic Mixing Layer in Sputter Profiling of Ta/Si Multilayers by TEM and AES 794
S. HOFMANN AND W. MADER

Letter to the Editor

Comment on the Paper 'Surface Composition and Chemical Bonding of Thermally Reduced Yttria as Studied by XPS and SEXAFS: Influence of Zr Doping' by Thromat *et al.* (*Surf. Interface Anal.* 15, 355 (1990)) 797
G. MORETTI